



# User Manual

## HeatMatrix® LUVO

### with internal glass-flake coating

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The applicable equipment design pressures and design temperatures of the different spaces should not be exceeded to prevent damage.

*Installation/Erection:*

- The user has to take care of adequate safeguards in the system that guarantee an operational pressure below the design pressure of the equipment at all times.
- The equipment has to be installed vertical with a well-designed supporting structure fixed to the brackets/lifting lugs. Installing the heat exchanger on the nozzles only without proper supporting is not allowed.
- Stresses and vibrations on the nozzles have to be prevented.
- Pulsations in the streams need to be prevented.
- During lifting or transport of the equipment contact with obstacles and high velocities should be prevented. The lifting lugs must be used for hoisting.
- The interconnected ducting/piping must be supported to prevent unacceptable loads on the nozzles of the equipment.
- In order to have sufficient space for maintenance, 2 meters above and 0.8 meters below the heat exchanger need to be clear.
- It is strongly advised to provide possibilities for a hoisting device above the heat exchanger for lifting of the top lid during maintenance.
- The user has to install sufficient insulation around the heat exchanger surface.

*Usage:*

- The user has to check correct installation of connections between the heat exchanger and piping/ducting before usage.
- The flue gas in- and outlet have to be blinded off with gas tight valves or blinding flanges when the air side of the heat exchanger is not connected or is not in operation.
- During opening of the sample points, adequate Personal Protection should be worn to prevent injuries.
- An adequate grounding connection on two locations has to be applied to release possible static electricity.
- The equipment should only be used in areas that are not classified according to ATEX 95 / 137.

### *Maintenance and Inspection*

- After 1 year of operation, the inside of the heat exchanger needs to be inspected in the presence of a HeatMatrix employee. The heat exchanger can be inspected in the regular maintenance interval when there is no degradation of the heat exchanger observed during this first inspection.
- Before removing lids or opening the heat exchanger, the user has to verify that the equipment is at ambient pressure, cooled down and properly separated from the process system (for example using spade's).
- In order to safeguard the continued excellent performance of the heat exchanger it is important to establish regular cleaning schedules for the heat exchangers in order to avoid clogging due to dust fouling. The bundles can be cleaned by flushing with water in case of fouling. After consultation with HeatMatrix Group, cleaning with a chemical agent can be considered depending on the type of fouling. The usage of steam, high-pressure water, organic hydrocarbon (solvents) or other mechanical means for cleaning are never allowed. This might seriously damage the equipment.  
Please note that adequate cleaning of the bundles is user's own responsibility. Warranty claims due to clogging of the bundles will never be covered under HeatMatrix Group's warranty.
- Damaged parts have to be replaced or repaired by qualified personnel.
- PTFE (band) gaskets should be used between the flanges of the equipment in order to have a proper gas sealing without leakage.
- The internal surface of the heat exchanger shell is coated with a glass flake vinyl ester coating. Welding or mechanical forces will seriously damage the coating and are therefore never allowed. Prevent collisions of tools or hard objects against the wall of the heat exchanger shell. Defects in the coating must be repaired immediately by qualified personnel.

### *Removing and placing procedure of the bundles*

- Before removing lids or opening the heat exchanger, the user has to verify that the equipment is at ambient pressure, cooled down and properly separated from the process system (for example using spade's).
- Remove top lit of the shell
- Remove the screws that keep the bundles in place
- Remove bottom lit on the manhole in the bottom
- Use an hydraulic (pneumatic) piston to push the bundles out of the O-ring assembly
- Remove the bundles via the top of the shell. One bundle weighs 13 kg
- Apply grease on the support rings of the new bundle
- Insert the new bundle and push it into the O-ring assembly
- Insert and tighten the bolts to keep the bundle in place
- Close man hole
- Close top lit